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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/511,199

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Yoichi Izumi

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EXAMINER

ECHELMMEYER, ALIX ELIZABETH

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

12/03/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/511,199	<b>Applicant(s)</b> IZUMI ET AL.	
	<b>Examiner</b> Alix Elizabeth Echelmeyer	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 August 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5,8,9,12-15 and 17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5,8,9,12-15 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office Action is in response to the amendment filed August 27, 2009. Claims 1, 8, 9, 12, and 17 are amended. Claims 1-5, 8, 9, 12-15, and 17 are pending and are rejected finally for the reasons given below.

### ***Claim Rejections - 35 USC § 112***

2. The rejection of claims 1, 8, 9, 12, and 17 under 35 U.S.C. 112, second paragraph, is withdrawn in light of the amendments.

### ***Claim Interpretation***

3. The product-by-process limitations of claims 1, 13, 15, and 17 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (see In re Thorpe, 227 USPQ 964, (CAFC 1985), In re Brown, 173 USPQ 685 (CCPA 1972), and In re Marosi, 218 USPQ 289, 292-293 (CAFC 1983)).

In this case, the structure of the sheet before it was formed or the method by which it was formed is not found to be pertinent to the final structure.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-5, 8, 9, 12-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kilb et al. (US 2001/0016282) in view of Yanagihara et al. (US Patent 5,543,250).

Regarding claims 1 and 17, Kilb et al. teach a sealed alkaline nickel/metal hydride storage battery (abstract). The battery is contained in a case having a cup-shaped bottom with a plate that is sealed to the top, as well as electrodes and a separator ([0002]). Since the battery is alkaline, and an electrolyte is necessary for the battery to function, the battery of Kilb et al. would inherently have an alkaline electrolyte.

The pores of the supports would inherently be in communication with each and with the gas transfer path, since the metallic region of the positive electrode is free of active material on the side bearing against the cell ([0006]). Since the porous support allows for the active material to be impregnated, where the active material is not impregnated it would inherently allow for communication between the pores.

Additionally, both electrodes of Kilb et al. contain a conductive support framework made of a porous metal ([0006]).

Kilb et al. teach that recesses in the electrode adjacent the bottom of the case to ensure proper gas exchange ([0022]).

Kilb et al. teach the battery of the instant invention but fail to teach the surface area of the gas transfer path covering the inner face of the bottom of the case or the

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sealing plate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to determine the most effective surface area of gas transfer since it is important to ensure proper gas exchange in order to prevent trapping of gases and failure of the battery. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. MPEP 2144.05 (IIB).

As for claim 5, Kilb et al. teach that the negative electrode is made of a hydrogen storage alloy impregnated into a foam framework ([0016]-[0017]).

Regarding claim 9, Kilb et al. teach that recesses in the outer side of an electrode should be 5-15% of the electrode thickness ([0022]).

As for claims 1 and 17, the support of the electrode is embedded in both the negative and positive electrodes ([0006]).

Kilb et al. fail to teach that the support is punched metal, or contains protrusions.

Yanagihara et al. teach an electrode for a storage battery having punched holes with burrs on their peripheries (abstract, Figure 3).

With regard to claims 1 and 17, Yanagihara et al. teach that the length of the tip ends is 10% or more of the thickness of the current collector plate including the protrusions (column 5 lines 1-25).

Regarding claims 3, 4 and 8, Yanagihara et al. teach that the thickness of the sheet after it is punched is 37.5  $\mu\text{m}$  to 150  $\mu\text{m}$  (column 4 lines 47-49; column 3 line 1).

As for claims 12 and 13, Yanagihara et al. teach a plurality of protrusions in the sheet protruding from either side of the sheet (Figure 3).

Regarding claim 14, Yanagihara et al. teach that a plate having center to center distance between holes of 3.5 mm was previously used, but the punched plate of Yanagihara et al. is better. Still, the pore diameter of 2 mm in the former plate and the plate of Yanagihara et al. is the same, so it would be obvious to make the center to center distance the same to use the plate in the same function (column 4 lines 57-58).

As for claim 15, the structure of the sheet before it was formed does is not considered pertinent since the final structure of the instant application and the final structure of Yanagihara et al. are the same (Figure 3). The plate of Yanagihara et al. has several punched holes (Figure 3).

Yanagihara et al. further teach that the punched plates provide improved adhesion between the plate and the electrode, creating better electrical conductivity (column 2 lines 20-25). Additionally, the three dimensional thickness of the plate improves the utilization of the active material, creating a higher capacity electrode, preventing voltage drops over large current discharge, and improving cycle life (column 3 lines 25-32).

It would be advantageous to use the punched plates of Yanagihara et al. in the battery of Kilb et al. in order to improve adhesion between the plate and the electrode, create better electrical conductivity, improve the utilization of the active material, create a higher capacity electrode, prevent voltage drops over large current discharge, and improve cycle life.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the punched plates of Yanagihara et al. in the

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battery of Kilb et al. in order to improve adhesion between the plate and the electrode, create better electrical conductivity, improve the utilization of the active material, create a higher capacity electrode, prevent voltage drops over large current discharge, and improve cycle life.

### ***Response to Arguments***

6. Applicant's arguments filed August 27, 2009 have been fully considered but they are not persuasive.

Applicant argues that the prior art of record does not teach the newly added limitation of claims 1 and 17. Applicant is directed to Figure 3 of Yanagihara et al., where it is seen that the conductive sheet is corrugated and punched from both sides.

Applicant further argues that the structure of the corrugated sheet, specifically corrugated and punched from both sides, yields unexpected results. Applicant cites Table 2 as proof of unexpected results.

The examiner finds that it has not been shown that the corrugated sheet punched from both sides yields unexpected results. It appears that Applicant meant to reference Table 2, which includes data about battery F-6, so that table will be discussed.

Only one data point is shown in Table 4 which shows the performance of a conductive sheet that is corrugated and punched from both sides. The table simply shows that one battery having that configuration performed slightly better than other batteries. It does not show that such a configuration consistently performs better than other batteries.

***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of



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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is (571)272-1101. The examiner can normally be reached on Mon-Fri 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICK RYAN/  
Supervisory Patent Examiner, Art Unit 1795

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